Message

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Sent: 6/2/2017 7:42:01 PM
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CC: ibalkissoon@techlawinc.com; Pang, Tiffanie [Pang.Tiffanie@epa.gov]; LINCOFF, MEILING [Lincoff.Meiling@epa.gov]
Subject: TDM - 6/27 Attend meeting by phone and prepare for it + extension on PRG calculations

Please attend by conference call a Navy meeting with CDPH about rad scanning of buildings
6/27 – 10-2, with lunch break roughly 12-1
The plan for this meeting is that Tetra Tech will give a presentation about its scanning of buildings. After they depart, the Navy and agencies will talk about followup actions needed by the Navy to address regulator concerns.

Also please participate in a planning meeting among just regulators, tentatively scheduled for 6/19, 9 am. Please be prepared to talk informally about the following:

1 – Any additions to the list of concerns we have already sent to the Navy. For your convenience see below the public version of 12/5 recommendations. In addition I will resend in a separate email information about worker allegations that should be protected as confidential because it is internal, deliberative, and pre-decisional.

2 – List of Questions we should ask Tetra Tech and the Navy in advance and at the meeting

3 – Recommendations on actions that the Navy should take to address EPA concerns.

In addition, I had previously sent a TDM for doing PRG calculations related to worker and recreational exposure and for scenario with no soil cover. I'd like to modify this. Please compare results for using an area of 420 acres vs 202 acres in the particulate dispersion modelling assumptions.

Also, please research density of aggregate base course under asphalt as an input to shielding calculations.

I am giving an Extension on PRG Calculations to 6/12/2017.

Excerpts from 12/5/2016 EPA recommendations to Navy

1. *Building scans:* Though the scan speed of buildings was originally outside the scope of this effort, for completeness, the Navy should at least provide the following: 1) a summary explanation of the issue that includes verifying what scan speeds were achieved for each of the buildings and whether documented radiation survey procedures were followed to ensure the Minimum Detectable Concentrations (MDCs) were met, 2) work Navy has already conducted to address the issue, and 3) any further work that will be necessary to ensure that the cleanup is protective. The Navy should also provide a discussion of potential public exposure and health risk related to this issue.

   The Navy should also address the elevated levels found in Buildings 271 and 406. It appears that levels found in Survey Unit 7 of Building 271 in the rescan should have been observed if prior scans had occurred at a speed of 8 approximately 8 cm/s or below. Previous scans appear to have been conducted at an average level of closer to approximately 2 to 3 cm/s. Details of these calculations appear in the attachment. Although reported results from the Final Status Survey Report showed many locations above these thresholds, no evidence of the beta static scans were observed. The Navy should address the implications of these findings for these and other buildings.

ATTACHMENT

A health physicist from EPA's contractor Techlaw, Inc., evaluated the Building 271 Survey Unit 7 data from the Final Status Survey Report and the rescan data provided in October 2016, from the Navy to estimate the average scan speed used in the previous work by Tetra Tech and the speed above which levels found in the rescan would have been missed.

Note that these estimates may not be based on the right input parameters, and the Navy has offered to provide factual information that may change the results.

Survey Unit 7 in Building 271 was used to perform calculations which indicate what the actual scan speed was. The target scan speed was 1.37 cm/second.

The detector used to scan for alpha/beta for Class 1 survey units on the floor was a gas proportional detector, Ludlum Model 43-37-1 with an active detector window size of 821 cm^2. From a review of the instrument specifications, the width of this detector is 15.9 cm in the direction of the scan, and 51.6 cm wide perpendicular to scan direction. Therefore, the width covered for each 'lane' of survey was approximately 51.6 cm.

From information provided in the Hunter's Point Final Status Survey Results, the Building 271 Survey Unit 7 (SU 7) included 71.90 m^2 and was investigated as a Class 1 Survey Unit, in accordance with guidance provided in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). SU 7 was divided into 1 large rectangle with dimensions of 10 m x 4.17 m = 40.17 m^2, and 2 smaller rectangles at 2 m x 4 m each, or a total of 4 m x 8 m = 32 m^2 to estimate the scan speed. Please note that this method provides an estimate only.

For the large rectangle, the room is 4.17m or 417 cm wide. The detector width is 51.6 cm, so 417/51.6 = 8. This would require scanning 8 lanes at 1000 cm in length each. This would total 8,000 cm of floor space to be scanned.

For the two smaller rectangles, area was assumed to be 2 m x 8 m each for a combined floor space equaling 32 m^2 or 3200 cm^2 of floor space to be scanned. The width of each rectangle equaled 2 m (200 cm) for a total combined width of 400 cm. 400cm/51.6 cm = approximately 8 lanes to be scanned at a length of 800 cm each. The total area to be scanned is calculated as 8 lanes x 800 cm = 6,400 cm of floor space.

8000 cm + 6,400 cm = 14,400 cm of space to be scanned in total.

Using scan data/information obtained from the Hunter's Point_Final Status Survey Result Building 271_03.23.2012, from pdf page 363 of scan survey information for Survey Unit 7, the entire survey was conducted in 98 minutes, or 5,880 seconds. If the surveys was conducted without any pauses or stops, this would equate to a scan speed of 14,400 cm/5,880 sec = approximately 2.4 cm/second.

In addition, we considered whether 496 measurements were sufficient to cover 71.90 square meters:

There are 719,000 cm^2 in survey unit 7 (71.90 m^2 x 10000 cm^2/m^2)

For 496 measurements, divide the total area by 496 to see if the number of measurements are consistent with the size of the instrument. The result of this calculation is 1449 cm^2/measurement, which is larger than the instrument size of 821 cm^2).

To check this, divide 719000 cm^2 by 821 cm^2 to see if they collected enough measurements. If the instrument is 821 cm^2 875 measurements should have been collected to cover the entire survey unit, whereas there were only 496 measurements recorded for the Final Status Survey Results.

Both methods suggest that they did not collect a sufficient number of measurements because the scan speed was too high.

EPA's contractor health physicist would give more weight to the static measurements.

It is noted that the quality of the data could not be checked because daily and weekly source checks for determining the instrument background and efficiency were within tolerance limits was not provided. Therefore, evidence to support that the instruments were working properly was not available for review.

According to the Base-wide Plan Revision 1 (TtEC 2007), Scan speeds may be adjusted based, provided the probability of detecting contamination does not fall below 90%. This follows RASO guidance and we would agree with this assumption.

Given the assumption that the probability of detecting contamination for a given Ludlum 43-37-1 detector with a width of 15.9 cm, and a scan speed that must be achieved in order to obtain at least a 90% confidence, using

the chart of probabilities included in the Addendum to Parcels B and G Radiological RACR on page 13 (Scan Speed vs probability), a scan speed of no faster than 8 cm/sec, with a scan time interval of 2 seconds would be needed to ensure the elevated areas of radioactivity are detected with a 90% confidence.

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